

WHAT IS CLAIMED IS:

1. A solid state imaging device comprising:

an imaging region including unit cells arranged
in a matrix of rows and columns to provide a plurality
of pixel rows, each of said unit cells having
photoelectric conversion means for photoelectrically
converting incident light, applied to pixels, to store
signal charges, readout means for reading out stored
signal charges to a detection node, and amplifying
means for amplifying the readout signal; and

a readout voltage switching circuit for setting a
readout driving signal, applied to said readout means,
to one of a plurality of voltages different to one
another according to internal control.

2. The solid state imaging device according to
claim 1, wherein said readout voltage switching circuit
sets a voltage of said readout driving signal,
corresponding to a readout pulse for dynamic range
increase, to a lower voltage than a voltage of said
readout driving signal corresponding to a usual readout
pulse.

3. The solid state imaging device according to
claim 1, wherein said readout voltage switching circuit
sets a voltage of said readout driving signal,
corresponding to said readout pulse for said dynamic
range increase, to a lower voltage than a voltage of
said readout driving signal corresponding to a pulse

4. A solid state imaging device comprising:

an imaging region including unit cells arranged in a matrix of rows and columns to provide a plurality of pixel rows, each of said unit cells having photoelectric conversion means for photoelectrically converting incident light, applied to pixels to store signal charges, readout means for reading out stored signal charges at a detection node, and amplifying means for amplifying the readout signal;

a plurality of readout lines provided in a horizontal direction in corresponding to each pixel row in said imaging region, said plurality of readout lines transmitting a readout driving signal for driving each readout means of said unit cells in a corresponding pixel row respectively;

a pulse production circuit for producing a plurality of pulses for respective pixel rows as pulse signals for controlling readout timing in said plurality of pixel rows;

a readout voltage switching circuit for setting a voltage of said readout driving signal, applied to said readout means in correspondence to a part of pulse in said plurality of pulses, to a voltage differ from said voltage of said readout driving signals, applied to

said readout means in correspondence to the other pulse in said plurality of pulses; and

5 a plurality of vertical signal lines, provided in correspondence to respective pixel columns in said imaging region, for transmitting a signal provided from said unit cells of said each pixel row in a vertical direction.

10 5. The solid state imaging device according to claim 4, wherein said pulse production circuit generates in sequence a readout pulse for a dynamic range increase and a usual readout pulse as said plurality of pulses, and wherein said readout voltage switching circuit sets a voltage of said readout driving signal, corresponding to a readout pulse for
15 said dynamic range increase, to a lower voltage than a voltage of said readout driving signal corresponding to said usual readout pulse.

20 6. The solid state imaging device according to claim 4, wherein said pulse production circuit generates in sequence a readout pulse for said electronic shutter, a readout pulse for said dynamic range increase and a usual readout pulse as said plurality of pulses, and wherein said readout voltage switching circuit sets a voltage of said readout
25 driving signal, corresponding to a readout pulse for said dynamic range increase, to a lower voltage than a voltage of said readout driving signal corresponding to

said readout pulse for said electronic shutter.

7. The solid state imaging device according to claim 4, further including:

vertical driving means for selectively supplying
5 said readout driving signal to said plurality of
readout lines in correspondence to said plurality of
pulses supplied from said pulse production circuit,
thereby driving said readout means of each pixel row in
said imaging region for several times.

10 8. The solid state imaging device according to
claim 7, wherein said vertical driving means provides a
plurality of readout driving signals, corresponding to
respective said plurality of pulses, during any
horizontal driving periods.

15 9. The solid state imaging device according to
claim 7, further including:

AD converter for converting signals, transmitted
to said plurality of vertical signal lines, to digital
signals;

20 said vertical driving means providing at least one
of said readout driving signal, corresponding to said
plurality of pulses, during effective horizontal
periods; and

said AD converter being controlled in such a
25 manner that signal conversion is stopped when said
readout driving signal is provided during said
effective horizontal periods.

10. The solid state imaging device according to
claim 7, wherein said imaging region further includes
reset means for resetting a detection node for reading
signal charges stored at said photoelectric conversion
5 means, and

wherein said vertical driving means supplies a
reset signal for driving said reset means prior to said
read driving signal.

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